CURRENT PERCEPTION THRESHOLD TESTING
MED205.030

COVERAGE:

Current perception threshold testing is considered investigational.

DESCRIPTION:

Electromyographic nerve conduction (EMG-NCV) tests are diagnostic studies designed to evaluate the function of large myelinated nerve fibers, (i.e., the motor nerves). EMG-NCV tests do not evaluate the function of smaller myelinated and unmyelinated sensory nerves, which may show pathologic changes before the involvement of the motor nerves. Current perception threshold testing (also referred to as sensory nerve conduction threshold [sNCT] testing) involves the quantification of the sensory threshold to transcutaneous electrical stimulation and therefore has been explored as a technique to evaluate the sensory nerves. Current perception threshold testing falls into the general category of quantitative sensory testing (QST). Other modalities of QST focus on perception of thermal or vibratory stimuli.

In current perception threshold testing, typically 3 different frequencies are tested:

- 5 Hz, designed to assess C fibers;
- 250 Hz, designed to assess A-delta fibers; and
- 2000 Hz, designed to assess the A-beta fibers.

Results are compared with those of a reference population.

Current perception threshold testing has been investigated for a broad range of clinical applications, including:

- evaluation of peripheral neuropathies,
- detection of carpal tunnel syndrome,
- spinal radiculopathy,
- evaluation of the effectiveness of peripheral nerve blocks,
- quantification of hypoesthetic and hyperesthetic conditions, and
- differentiation of psychogenic from neurologic disorders.

The Neurometer Current Perception Threshold (Neurotron, Inc) and the Medi-Dx 7000 (Neuro Diagnostic Associates), are devices approved by the U.S. Food and Drug Administration (FDA) for the use of measuring the threshold for sensory nerve conduction.

RATIONALE:

In 1999 the American Association of Electrodagnostic Medicine (AAEM) published a technology review of the Neurometer device.

The AAEM assessment concluded there is inadequate scientific literature to validate the clinical role of current perception threshold testing. Much of the literature compares the results of
Neurometer testing to nerve conduction studies in patients with known disease. In many instances the results of the Neurometer testing demonstrated more numerous or pronounced abnormalities compared to nerve conduction studies, consistent with the hypothesis that abnormalities of small nerve fibers precede those of the large nerve fibers tested in nerve conduction studies. However, this observation could also be related to the fact that use of the Neurometer involves testing at multiple sites with 3 different frequencies and that any identified abnormality is considered significant. Testing the perception threshold at different frequencies is designed to evaluate the function of different subclasses of nerve fibers. However, this hypothesis has not been adequately evaluated, in part due to a lack of a diagnostic gold standard for comparison purposes. In this situation, validation of a diagnostic technology requires study of how the technique is used in the management of the patient and whether subsequent changes in the management of the patient are associated with improved health outcomes. Finally, results of the Neurometer testing are compared to a normal reference population. The review by the AAEM found that the source of the normal values was not apparent from the published literature. The AAEM assessment concluded with the following recommendations regarding research to validate the clinical utility of the Neurometer.

- Reference values need to be established for well-characterized and representative populations.
- Reproducibility and interoperator variability of the Neurometer CPT moral values need to be established and expressed statistically in control subjects and patients with specific diseases.
- Sensitivity and specificity need to be established and compared to an appropriate standard.

In promotional material, the Medi-Dx 7000 device is presented as an alternative to the Neurometer with the capability of identifying abnormalities in branches of individual nerves. A literature review failed to identify any articles in the published peer-reviewed literature specifically focusing on the Medi-Dx 7000 device.

DISCLAIMER:

State and federal law, as well as contract language, including definitions and specific inclusions/exclusions, takes precedence over Medical Policy and must be considered first in determining coverage. The member’s contract benefits in effect on the date that services are rendered must be used. Any benefits are subject to the payment of premiums for the date on which services are rendered. Medical technology is constantly evolving, and we reserve the right to review and update Medical Policy periodically.

* HMO physicians who are contracted/affiliated with a capitated IPA/medical group must contact the IPA/medical group for information regarding HMO claims/reimbursement information and other general polices and procedures.

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